

# The effect of training mental states on improving mind theory and the social skills of elementary school children

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## Abstract

Mind theory is defined as the ability to understand that others have got some mental states such as thoughts, inclinations, and beliefs that can differ from our mental states or from the reality. This study is aimed at determining how much the training of mental states can affect improving the theory of mind and the social skills of school children. The design of this study was quasi-experimental, with pre-test, posttest and control group. 30 second-grade female elementary school students were selected for this study based on cluster sampling. After homogenizing the subjects based on age, intelligence and mind-theory grades, they were randomly divided into two groups, each having 15 students. Mental states were taught to the students of the experimental groups for nine sessions while the control group did not receive any instruction. Before and after instructions, both groups received mind theory test and social skills questionnaire. The data collected from pre-test and posttest were analyzed using Co-variance analysis. The results indicated that the training of mental states had significant effect on improving the levels of mind theory and the social skills of school children. The results indicated that we can use this plan of mental state training to improve the social skills and to solve the problems of school children.

**Keywords:** mind theory, social skills, mental state training.

## Introduction

The mind theory is one of the most challenging topics in developmental psychology (Taylor, & Kinderman, 2002). This theory was first mentioned by Premack and Woodruff (1987). These researchers used mind theory to refer to the capabilities of the person attributing mental states such as emotions, beliefs, intentions, and thoughts to others and as a result, to predict their behavior. Mind theory is a component for successful social interactions (Peal, & Bereckei, 2007) and any other social interactions especially high level and complicated interactions such as deceiving others, sympathizing with them and humor depends upon such abilities (Peterson and Siegel, 2000). In other words, mind theory is defined as the ability to understand one's and other's mental states (Laranjo *et al.*, 2010) which helps the person to have a clear understanding of their behavior in term of their emotions, beliefs and intentions.

People observe and infer about mental states of others when participating in the social interactions with them. These observations and inferences help them learn about the underlying motivations of the behavior of others or predict their subsequent behavior and also form their attitude toward them based on that behavior (Astyngton, 2003). The results of studies indicated that children can achieve such abilities when they are at the pre-elementary school. And, this ability enables them to understand their mental state and that of other's. Therefore, it is considered an important factor for the social

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competence of children (Laranjo *et al.*, 2010). For school-aged children, peers play an important role in the process of their socialization. Children of this age enter their peer group through some important social skills such as cooperation, compromise and friendship (Stewart & Sndyn, 1995, as cited in Abdi, 2008).

### *Statement of the problem*

Studies indicated that the social skills of children also depend on their academic success. In general, the acquisition of social skills and the acquisition of the skills related to mind theory are important areas in children's daily communications. Further, the acquisition of this skill in practice gives the children a powerful tool to explore, predict and change the behavior of others. In other words, mind theory provides a framework for the learning of school-related activities. Therefore, improving these components can enhance children's success at school. In terms of the fact that, so far, few studies have been done about mind theory in Iran and the studies done were mostly about training mind theory based on traditional approach and the criterion of judgment about responding to assignments was a wrong belief which was based on the idea of one dimensionality of mind theory. Therefore, in this study, paying attention to the levels of mind theory from the multi-dimensionality view point has been taken into account. Moreover, most of the few studies about mind theory in Iran were done on exceptional children. Therefore, focusing on this issue and its applications to solve children's problem is not only new but also important.

In terms of the obvious gaps in this field, the current problem is that whether the training of mental states such as sorrow, happiness, desire, belief, etc. can enhance the levels of mind theory in elementary school-aged children and whether this training can improve the functioning of children's social skills and the understanding of children's social recognition.

### *The significance of the study*

When children enter primary school, they are not interested in staying alone most of the times. They love to be at the company of others and extend the circle of friends in their relationships. How to make friends and get along with them is a flourishing experience which helps them grow. Peer acceptance is very important for the infant in school period and is a predictor of the subsequent adapt-

ability in the adolescent period. Theoretically, little research was conducted about the theory of mind in our country; therefore, there is a need to conduct more research in this regard. And, we know that the theory of mind has an important role in the improvement of social relationships and successful social interactions. Therefore, the present research helps improve the theoretical promotion of this relationship.

### *Research Hypotheses*

1. Mental state training can improve the ability of recognizing emotions pretention at the first level of mind theory.
2. Mental state training can improve the ability of understanding the primary wrong beliefs at the second level of mind theory.
3. Mental state training can improve the ability of understanding the secondary wrong beliefs at the third level of mind theory.
4. Mental state training can improve social skills.

## *Methodology*

### *Participants*

Statistical population of this study includes all 8-year-old girls in Tehran who were studying at elementary school during the educational year of 2010-11. The samples were selected based on cluster sampling. In the first stage, primary schools were considered as the main cluster having eight-year-old girls. Then, among school districts, one district was selected at random (district 5) and among the schools of the district concerned, two schools were selected and among the classes of each school, four classes were selected. Finally, based on the entrance criteria, a sample of 30 students were selected on the basis of available sampling. At the last stage, 15 students were randomly selected as the experimental group and 15 students as the control group.

### *Instruments*

**Mind theory questionnaire:** To collect data related to the theory of mind, the 38-item test related to the theory of mind was selected (Ghamarani, Alborzi, and Kheir, 2006). The test has three subscales including: the theory of mind at the first level containing 20 questions, the theory of mind at the second level containing 13 questions, and the theory of mind at the third level containing 5 questions. To check the validity of this test, content validity and

the correlation of subtest were used simultaneously with a total score of validity. The Validity of the test was estimated 0/89 and it was significant at .01 level. Correlation coefficients between subtests and total scores in all cases were significant fluctuating from 0/82 to 0/96. Also, the reliability coefficient of scorers was 98% (Ghamarani, Alborzi and Kheir, 2006).

**Social Skills Rating System (SSRS):** Assessment of social skills was devised as part of measurement scales of social skills (SSRS) which was made by Gresham and Elliott (as cited in Shahim, 2002). This study used teacher form with a special scale for primary school including 48 items and three options. Regarding the reliability and validity of the test, Gresham and Elliot (as cited in Shahim, 2002) reported the validation of this scale as much as %94 using Cronbach Alpha and test-retest reliability. In Iran, the particular form of the primary school children (Shahim, 2002) and preliminary school for this scale (Shahim, 2002; Abdi, 2008), its translation and psychometric specifications were provided. After several reviews, Shahim (2002) has reported the validation of the primary school form as much as 77% and 99% (Shahim, 2002).

### Procedure

For the purpose of this study, the following steps were taken:

First, four classes were selected for all students and then mind theory test including 38 items was administered (as a pre-test). Among the students who could receive entry criteria, 30 students were

regarded as qualified to participate in the study. Then, they were randomly selected as experimental and control groups.

In the next procedure, the social skills of both groups of participants were measured by a social skills rating test and teacher's form as a pre-test.

In the next step, the experimental group had 9 training sessions in one month, each lasting 20 minutes while the control group did not receive any training. They were only given some pictures for painting.

As far as the content of the training sessions is concerned, it includes training emotions such as joy, sadness, anger, fear and training wishes and beliefs including fulfilled wishes and true belief, unfulfilled wishes and true belief, fulfilled wishes and wrong belief, and finally unfulfilled wishes and wrong belief.

After the end of the training course, the test of mind theory and social skills were administered as the posttest again and their results were compared with initial base line in the pre-test.

### Results and discussion

In order to analyze data in this study, Analysis of Covariance (ANCOVA) was used to check the research hypotheses.

**H01:** Mental state training can improve the ability of recognizing emotions and pretention at the first level of mind theory.

As it is clear from Table 1, training mental states improved the first level of mind theory in the experimental group.

**Table 1. Results of ANCOVA for mean posttest of emotions and emotion recognition (the first level of theory of mind) among control and experimental groups.**

Source of variation	Sum of squares	df	Mean square	F
Pretest	62.91	9	0.89	0.577
Group	159.33	1	19.45	0.007
Error	39.83	4.86		

**Table 2. Results of ANCOVA for mean posttest of understanding the primary wrong beliefs at the second level of mind theory among control and experimental groups.**

Source of variation	Sum of squares	df	Mean square	F
Pretest	43.326	7	2.876	0.1.8
Group	45.565	1	21.469	0.003
Error	14.015	6.603		

**H02:** Mental state training can improve the ability of understanding the primary wrong beliefs at the second level of mind theory.

By considering the results of table 2, we come to this conclusion that mental state training can pro-

mote the ability of understanding the primary wrong beliefs at the second level of mind theory.

**H03:** Mental state training can improve the ability of understanding the secondary wrong beliefs at the third level of mind theory.

**Table 3. Results of ANCOVA for average understanding of secondary wrong belief (the third level of mind theory) among control and experimental groups.**

Source of variation	Sum of squares	df	Mean square	F
Pretest	6.084	1	14.609	0.139
Group	1.847	1	4.438	0.250
Error	0.494	6.603		

As it is shown in table 3, training mental states has not improved the third level of mind theory in the experimental group.

The first, second and third questions in this study were based on whether training mental states can improve the ability of 8-year-elementary students to recognize emotions and pretention (Level I), the ability to understand initial false beliefs (Level II), and the ability to understand secondary false belief (tertiary level).

In terms of the results in tables 1, 2, and 3, we can say that training mental states can cause the improvement of the first, second and general level of mind theory, whereas this difference is not significant in the third level.

The findings of the research are in line with the findings of Adib and Tajrishy (2010), Ansari Nejad (2010), Abdollah Zadeh Raffi (2009), Alborzi and Ghmarani (2005), Appleton Verdi (1996), Feng *et al.* (2008).

Adib and Tajrishy (2010) found that training mind theory at the second level is effective, and they also expressed that training mind theory is effective at the third level.

Ansary Nejad (2010) studied the effect of training mind theory on the improvement of the level of mind theory in trainable, mentally retarded students. He resulted that the training can be effective at the second and third level.

Abdollah Zadeh Raffi (2006) conducted another research on the relationship between theory of mind and individual and family factors in 8-15 year-old mentally-retarded students and the results showed that individual factors (age and intelligence) could have more effect than the family

factors (number of sisters and brothers, etc) on the evolution of the theory of mind.

Further, Ghamarani and Alborzi (2005) did another study entitled "Developmental process of theory of mind among normal and mentally-retarded students during the age of 7-9" and they studied its relationships with demographic variables such as age, gender and socio-economic variables. Their findings indicated that in both groups of normally and little mentally retarded students, the trend of the development of mind theory was ascending. But, little mentally retarded students did not achieve the third level. Also, the groups did not differ significantly from each other in terms of mind theory.

Finally, Appleton Verdi (1996) studied the effect of training the success of three-year-old infants through a false belief test. Results showed that the experimental group in the post-test and follow-up test performed significantly better than the control group.

**H04:** Training mental states can lead to an improvement in social skills.

With regard to the results in table 4, training mental states significantly improved the scores of social skills. In other words, there is a significant relationship between social skills and mind theory. In line with this result, Walker (2005) observed the correlation between mind theory and social competence. Kinzberg (2003, as cited in Hamid pour, 2009) observed the correlation between community-friendly behaviors and adaptability with the mind theory.

Then, Beheshti (2010) conducted another research on children aging 4 to 6 years and reported that there was a significant relationship between their social skills and theory of mind after the age of 5. Also, Olyanasab (2007, as cited in Hamid pour,

2009) reported a significant relationship between mind theory and age. In other words, the more the age of the students, the more the scores. He also stated that there is a significant relationship between theory of mind and social compatibility. In another study, Hughes (2004) observed a negative relation-

ship between theory of mind and socialization. Finally, Fyng *et al.* (2008), in their research on the effects of social skills and theory of mind, studied the social competence of elementary sixth-grade students suffering from autism. They found that training was effective for all three levels.

**Table 4. The results of ANCOVA for mean posttest of group membership on the scores of social skills questionnaire.**

Source of variation	Sum of squares	df	Mean square	F
Pretest	720.053	1	118.608	0.00
Group	131.780	1	217.230	0.00
Error	111.46	32	47.875	

## Conclusions

With respect to the results of this study, it can be said that training mental states can promote the first, second and general level of mind theory whereas this difference is not significant at the third level. In explaining these findings, it should be noted that most studies that attended to the training of theory of mind believed that the infants in the experimental group with a false belief have made progress in the theory of mind. The results of this research suggest that questions alone do not suffice for the evolution of mind theory. Experience can also be effective for the evolution of mind theory (Abdollah Zadeh Rafi, 2009). The studies which emphasized the role of environmental factors indicated that parent's speaking with their children about mental states is effective in the evolution of child's mind theory and understanding of initial false belief. (Lbonty et al., 2008). Also, talking with brothers, sisters and other family members causes the children to have better performance in the assignments of initial false beliefs because they enjoy more opportunities for learning about the thoughts of other people. Basically, communication and social learning can be an important source for the development of children's understanding of mind (see Brown, Donlon-Macaul, & Dunn, 1996). In the study of Morris *et al.* (1999, as cited in Shahim, 2002), a high correlation was obtained between age and theory of mind. The results showed that in the age group of 5 to 12 years, 80% of 11 and 12-year-old children have reached the third level of theory of mind (TOM3). Finally, based on the theoretical and experimental studies, we can

conclude that children's perceptions of the social world changes parallel to their age.

On the other hand, with respect to the results of this study, training mental states improved the scores of social skills significantly. Therefore, we can conclude that mind theory was considered vital for making behaviors and social communications meaningful. In fact, it is vital for interacting with others. Mind theory has impact on social skills and in turn, the qualification of mind theory maybe important for success in school because social skills of children and their academic success have got a close relationship with each other. In terms of the importance of mind theory as a social tool, any damage in the development of theory of mind can create a barrier in interaction with others. Social variables such as family, peers, school and culture along with the individual and genetic variables are effective on the evolution of theory of mind. In addition, social relationships are effective on the emotions, desires, beliefs and opinions of the child and therefore are effective on their growth of understanding. Accordingly, all these are effective on the growth of theory of mind.

Regarding the limitations of the study, we can mention that, in relation to the theory of mind and social skills, other intervening factors such as population, family (number of brothers and sisters), parental age, social and economic situation and other conditions are uncontrolled. Further, children's cognitive characteristics can have an effect on the growth of their mind theory such as language ability. However, they were uncontrolled in this study. Finally, the tests used in this study on the social skills were written using paper and pen while more effec-



tive measurements needs direct clinical interview and evaluation by trained assessors.

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